

A COLLECTION OF THALASSINIDEA
(CRUSTACEA: DECAPODA) FROM THE
PACIFIC COAST OF COLOMBIA, WITH
DESCRIPTION OF A NEW SPECIES AND A
CHECKLIST OF EASTERN PACIFIC SPECIES

Rafael Lemaitre and Gabriel E. Ramos

Abstract.—Twelve species of Thalassinidea are reported from the Pacific coast of Colombia, bringing to fourteen the total number of thalassinids known from this coast. Of the twelve species reported, one is new, *Neaxius frankeae*; five had not been previously reported for this coast: *Lepidophthalmus bocourti* (A. Milne Edwards), *Callianidea laevicauda* Gill, *Pomatogebia rugosa* (Lockington), *Upogebia maccraryae* Williams, and *U. tenuipollex* Williams; and one, *Axiopsis serratifrons* (A. Milne Edwards), was unknown in the eastern Pacific. A checklist of all known species of Thalassinidea from the eastern Pacific is included.

As a result of sampling efforts during the past 10 years by several biologists along the poorly explored Pacific coast of Colombia, an important collection of thalassinid shrimps was obtained. The material is of considerable value because the thalassinids from this coast have not been adequately sampled, and because many of the species in this group are incompletely known, some based only on a few specimens. The material contains 12 species, including a new species, *Neaxius frankeae*. Five species, *Lepidophthalmus bocourti* (A. Milne Edwards, 1870), *Callianidea laevicauda* Gill, 1859, *Pomatogebia rugosa* (Lockington, 1878), *Upogebia maccraryae* Williams, 1986, and *U. tenuipollex* Williams, 1986, are reported for the first time from this coast. One of our specimens has been found to represent *Neocallichirus grandimana* (Gibbes, 1850), a species that also occurs in the western Atlantic. Also discovered in the collection is a juvenile specimen of *Axiopsis serratifrons* (A. Milne Edwards, 1873), a morphologically variable species that is broadly distributed in the tropics but was previously unknown from the eastern Pa-

cific. One species of *Pomatogebia* Williams & Ngoc-Ho, 1990, and four of *Upogebia* Leach, 1814, are present in the material. Finally, one specimen could only be assigned to an undetermined species of the genus *Axianassa* Schmitt, 1924, due to its poor condition. Except for the species of *Pomatogebia* and *Upogebia*, discussed by Williams (1986) and Williams & Ngoc-Ho (1990), and *Callianidea laevicauda*, discussed by Kensley & Heard (1991), the species are illustrated, and the most important recognition characters, coloration in life, and habitat where the specimens were collected, are included. In addition, a checklist of all known Thalassinidea from the eastern Pacific is presented (see Appendix), indicating the most recent nomenclatorial changes. A total of 14 species are now known from the Pacific coast of Colombia.

The specimens used are deposited at the “Colección de Referencia de la Sección de Biología Marina, Universidad del Valle” (CRBMUV), and the National Museum of Natural History, Smithsonian Institution, Washington, D.C. (USNM). The abbreviation “CL” indicates the carapace length

measured along the dorsal midline, from the tip of the rostrum to the posterior margin.

Systematics

Family Axiidae Huxley, 1878

Neaxius frankeae, new species

Fig. 1

Material examined. — La Barra, Gorgona Island: ♂ holotype, USNM 251731, CL 7.2 mm, 1 Feb 1987, coll.: R. Franke. (parts missing from holotype: antennal flagella, left antennular flagella, left cheliped, and all pereopods except right 1st and 5th).

Description of holotype. — Rostrum triangular, exceeding eyes, reaching to about distal margin of second antennular segment, bifurcated at tip into strong upwardly curved spines; lateral margins each with 2 strong spines directed obliquely upward and forward, and extending posteriorly as ridge with 2 small spines near base of rostrum; dorsal surface with median ridge bearing 3 small blunt spines, and row of tufts of plumose setae near lateral margin. Carapace smooth, anterior margin with strong antennal spine and 3 small subantennal spines. Branchios-tegite with anterior margin rounded. Cephalic groove weakly marked ventrolaterally, unarmed.

Corneae well developed, dilated, pigmented; distal margin reaching to about base of bifurcated spines of rostrum.

Antennular peduncles reaching to about distal $\frac{1}{4}$ of fourth antennal segment; segments each with transverse row of setae on distal margin.

Antennal peduncle exceeding rostrum by about $\frac{1}{2}$ length of fourth segment; 1st segment unarmed; second segment with small spine proximally on dorsal surface, and with strong spinelike dorsodistal projection reaching slightly beyond tip of rostrum; acicle extending slightly beyond tip of dorsodistal projection of second segment, terminating in strong spine, and with 2 strong spines on ventral margin; third segment with

ventral spine; fourth and fifth segments slender, unarmed.

Epistome armed medially with small spine between first segments of antennules, and 2 inwardly curved spines on lateral angle.

Third maxilliped slender, with exopod and long setae on ventral margin of segments; coxa with small spine mesially; basis with small spine ventrally; ischium with well developed crista dentata formed by 12 sharp to blunt teeth and strong distal tooth directed mesiad; merus armed with 4 strong spines (increasing in length distally) on ventrolateral margin, and small dorsodistal spine; carpus with 2 (right) and 3 (left) spines on ventrolateral margin; propodus and dactyl unarmed.

Right cheliped (pereopod 1) with setae on dorsal and ventral margins; fingers with tufts of setae on lateral and mesial face; ischium and merus with row of spines on ventral margin, merus also with dorsal row of spines; carpus with 2 dorsodistal spines and spine on ventrodistal angle. Palm smooth on lateral and mesial surfaces, with row of tufts of setae on lateral face near, and parallel, to proximal margin; dorsal margin with at least 5 small spines (palm damaged on dorsal and part of lateral surfaces); ventral margin unarmed, well delimited. Fixed finger with large blunt tooth pointing obliquely forward at about midlength of cutting edge, and small blunt teeth proximally. Dactyl with cutting edge more or less straight on distal $\frac{2}{3}$ and proximally with weakly developed teeth.

Fifth pereopod subchelate; propodus with numerous simple setae on distomesial margin, and 1 serrate seta on distolateral angle; dactyl slender, minutely serrated on flexor margin (visible under high magnification).

Coxa of pereopods 1–4 with 2–4 spines on mesial face; coxa of pereopod 5 unarmed. Epipods present on 3rd maxilliped and pereopods 1–4. Sternite of pereopod 4 divided into 2 processes separated by deep groove; each process with spine directed anteriorly. Sternite of pereopod 5 with lateral

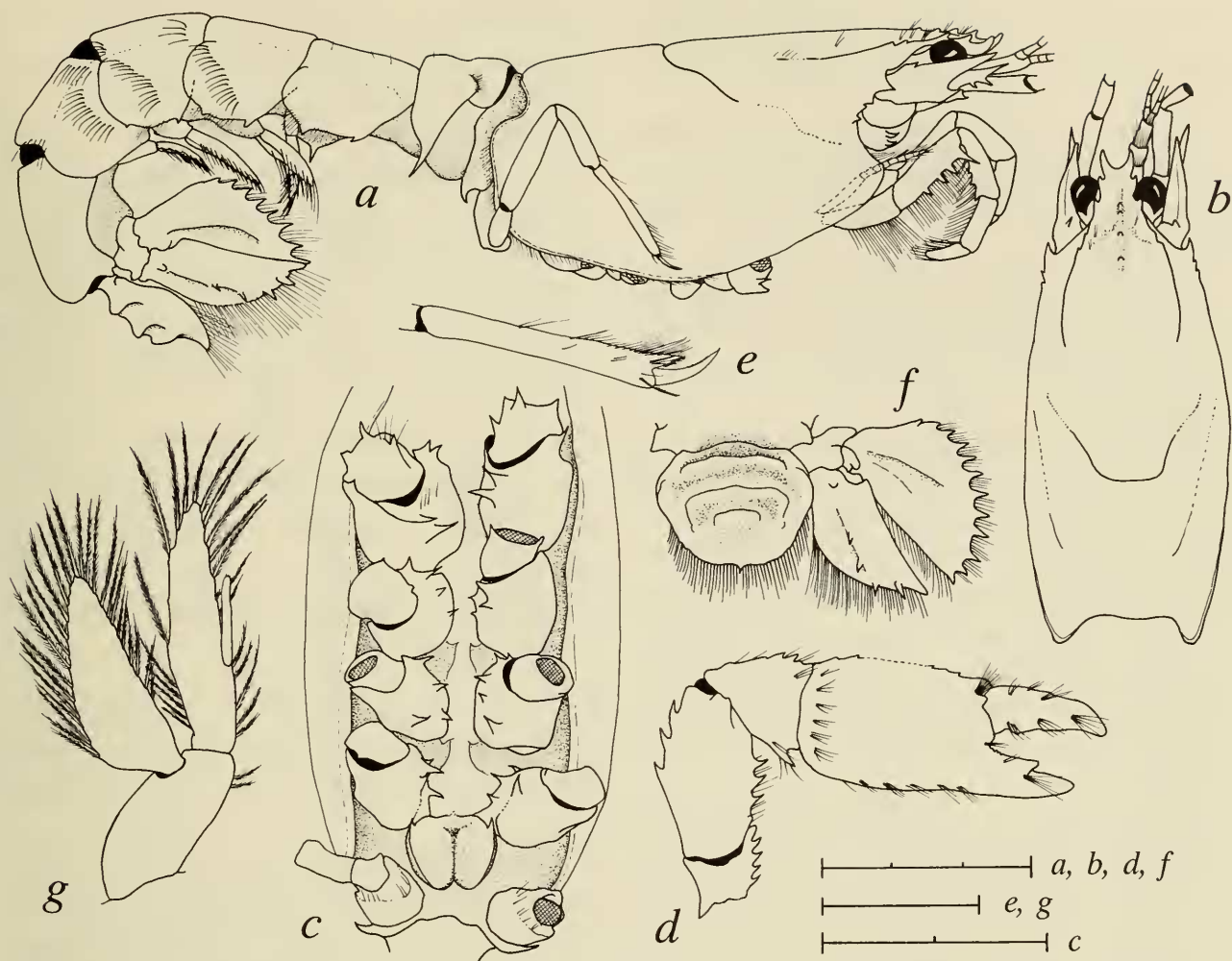


Fig. 1. *Neaxius frankeae*, new species. Holotype, USNM 251731 a, body, lateral view; b, carapace and cephalic appendages, dorsal view; c, sternum; d, right cheliped, lateral view; e, propodus and dactyl of pereopod 5, lateral view; f, telson and right uropod, dorsal view; g, male right pleopod 2, anterior view. Scales equal 3 mm (a, b, d, f), 1 mm (e, g), 2 mm (c).

projection on each side in form of spine directed ventrally and slightly forward.

Abdomen about 1.6 times as long as carapace. Dorsal surface of somites smooth, with scattered setae. Pleura of somite 1 terminating ventrally in strong spine; pleura of somites 2–4 with 2 small spines on ventral margin, pleura of somites 3–5 with transverse row of setae. Sternite of somite 2 armed with spine medially. Somite 6 about 1.4 times as long as somite 5. Pleopod 1 absent. Pleopods 2–5 each with appendix interna, lacking appendix masculina; exopod and endopod with long plumose setae.

Uropods longer than telson, setose on margins; outer ramus lacking transverse su-

ture, with row of 12 strong spines on outer (posterior) margin, and straight inner margin; inner ramus with straight lateral margin terminating distally in strong spine, with 2 spines near edge of posterior margin, and median longitudinal carina bearing 2 small spines.

Telson widest on anterior third, diminishing in width posteriorly. Lateral and posterior margins with long setae. Dorsal surface with 3 well defined transverse ridges curving posteriorly on lateral margins. Posterior margin with median spine.

Color in life. — Body, chelipeds and walking legs white. Internal organs visible through cephalothorax light brown.

Distribution.—Known only from the holotype collected at Gorgona Island, Colombia.

Etymology.—The species is named for the Colombian biologist Rebeca Franke, in recognition of her collecting efforts at Isla Gorgona.

Habitat.—Near low tide level, in burrows formed by gravel and coralline sand. Found with various species of shrimps of the genus *Alpheus*.

Remarks.—With the description of this new species there are now four in the genus *Neaxius* Borradaile, 1903, formerly a subgenus of *Axius* Leach, 1815, but recently elevated to generic rank by Sakai & De Saint Laurent (1989). The other species are: *N. acanthus* (A. Milne Edwards), from the Indo-Pacific, *N. glyptocercus* (von Martens), from Australia, and *N. vivesi* (Bouvier), from the eastern Pacific.

A comparison of our specimen with the descriptions of *N. acanthus* and *N. glyptocercus* provided by Poore & Griffin [1979: 235, 236, figs. 7, 8; as *Axius* (*Neaxius*) *acanthus* and *A. (N.) glyptocercus*], and with specimens deposited in the USNM of *N. vivesi*, shows that the new species is most similar to the eastern Pacific *N. vivesi* but clearly differs from it in a number of characters. Although a single specimen of *N. frankeae* is known, it appears that it is a species with individuals of much smaller size than *N. vivesi* (specimens examined of *N. vivesi* all exceeded 25 mm in CL whereas the type of the new species has a CL of only 7.2 mm). In *N. frankeae*, the cervical groove is unarmed whereas in *N. vivesi* the lateral portion is armed with several spines; the second segment of the antennal peduncle bears one spine whereas there are four (two dorsomesial and two dorsolateral) in *N. vivesi*; the antennal acicle is armed with two ventral spines whereas there are five in the USNM material of *N. vivesi*, and four, according to De Man (1925:59), in the type of *N. vivesi*; the lateral face of the merus and carpus of the major cheliped are unarmed

whereas in *N. vivesi* the merus has a row of lateroventral spines, and the carpus bears a cluster of strong spines; the pleura of abdominal somite 1 terminates in a simple spine whereas in *N. vivesi* this spine is bifid or trifid; the ventral margin of the pleurae of abdominal somites 2–4 are armed with two spines, whereas in *N. vivesi* the pleura of abdominal somite 2 have eight, and those of abdominal somites 3 and 4 have two.

Axiopsis serratifrons

(A. Milne Edwards, 1873)

Figs. 2, 3

Axiopsis serratifrons.—Kensley, 1981:1253, figs. 1–5.—Manning & Chace, 1990:31, figs. 16, 17.

Material examined.—Antiguo Muelle, Gorgona Island: 1 ♀ (juvenile), CL 13.9 mm, 9 Mar 1989, coll.: R. Franke, USNM 251732.

Distribution.—Eastern Pacific: Gorgona Island (Colombia). Indo-Pacific, including the Red Sea. Western Atlantic: Florida to Belize, including Bermuda. South Atlantic: Ascension Island.

Habitat.—Subtidal near low tide level, in substrate of sand and stones.

Remarks.—The morphology and coloration of the single specimen collected generally agrees with Kensley's (1981) detailed redescription of this species, except for the presence in our specimen of rudimentary first pleopods. This pleopod condition, however, can be attributed to the juvenile (sexually immature) stage of our specimen. The only other species of *Axiopsis* Borradaile, 1903, known from the eastern Pacific is *A. baronai* Squires, 1977. The two species can be differentiated by several characters. The gastric region of the carapace of *A. serratifrons* has more spines than in *A. baronai*; the submedian carinae are arranged in a horseshoe shape in *A. serratifrons*, whereas they are straight in *A. baronai*. The outer surface of the palm of the first pair of chelipeds (pereopods 1) bear scattered tufts of

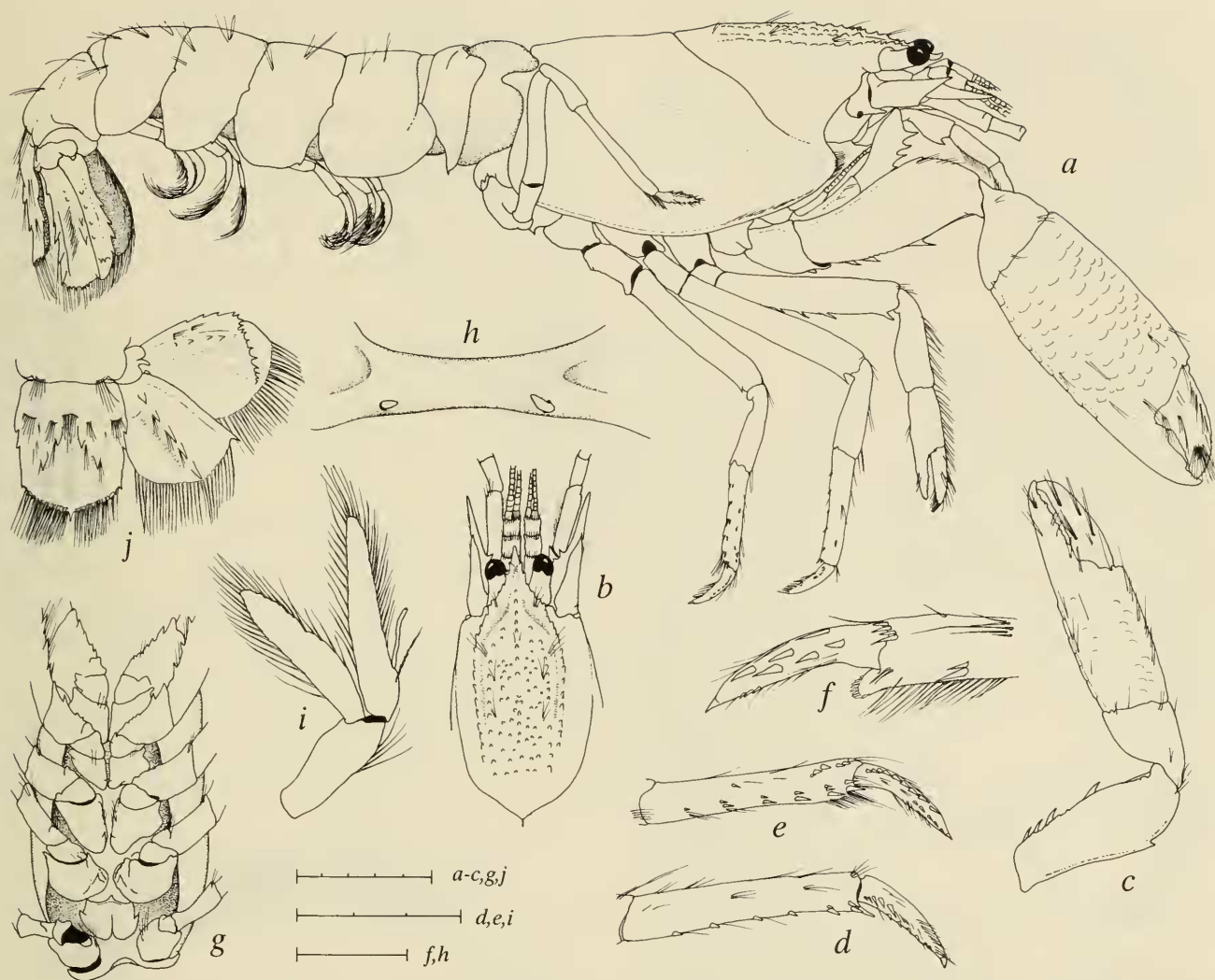


Fig. 2. *Axiopsis serratifrons* (A. Milne Edwards, 1873), ♀ (juvenile) CL 13.9 mm, Gorgona Island, USNM 251732. a, body, lateral view; b, anterior portion of carapace and cephalic appendages, dorsal view; c, left, minor cheliped (pereopod 1); d, propodus and dactyl of pereopod 3, lateral view; e, propodus and dactyl of pereopod 4, lateral view; f, distal portion of propodus and dactyl of pereopod 5, mesial view; g, sternum; h, abdominal somite 1, ventral view, showing rudimentary pleopods; i, right pleopod 2, anterior view; j, telson and right uropod, dorsal view. Scales equal 5 mm (a–c, g, j), 3 mm (d, e, i), and 1 mm (f, h).

setae in *A. serratifrons*, whereas in *A. baronai* the outer surface is densely covered with tufts of setae. The third maxilliped of *A. serratifrons* has two to three strong spines on the ventral margin that are lacking in *A. baronai*. The telson of *A. serratifrons* has three submarginal spines laterally on the distal margin, whereas these spines are absent in *A. baronai*.

Axiopsis serratifrons has long been recognized to be widely distributed in the Indo-Pacific, and more recently has also been recorded in the western Atlantic (Kensley 1981) and Ascension Island, in the central

Atlantic (Manning & Chace 1990). The species, however, had not been previously recorded in the eastern Pacific, and its presence here provides further evidence of its broad, pantropical distribution.

Family Callianassidae Dana, 1852
Corallianassa xutha Manning, 1988

Corallianassa xutha Manning, 1988:885, fig. 3a–l. — Manning & Felder, 1991:777, figs. 1, 2, 5.

Material examined. — Gorgona Island: 1 ♀, CL 6.2 mm, El Tractor, 18 Mar 1987,

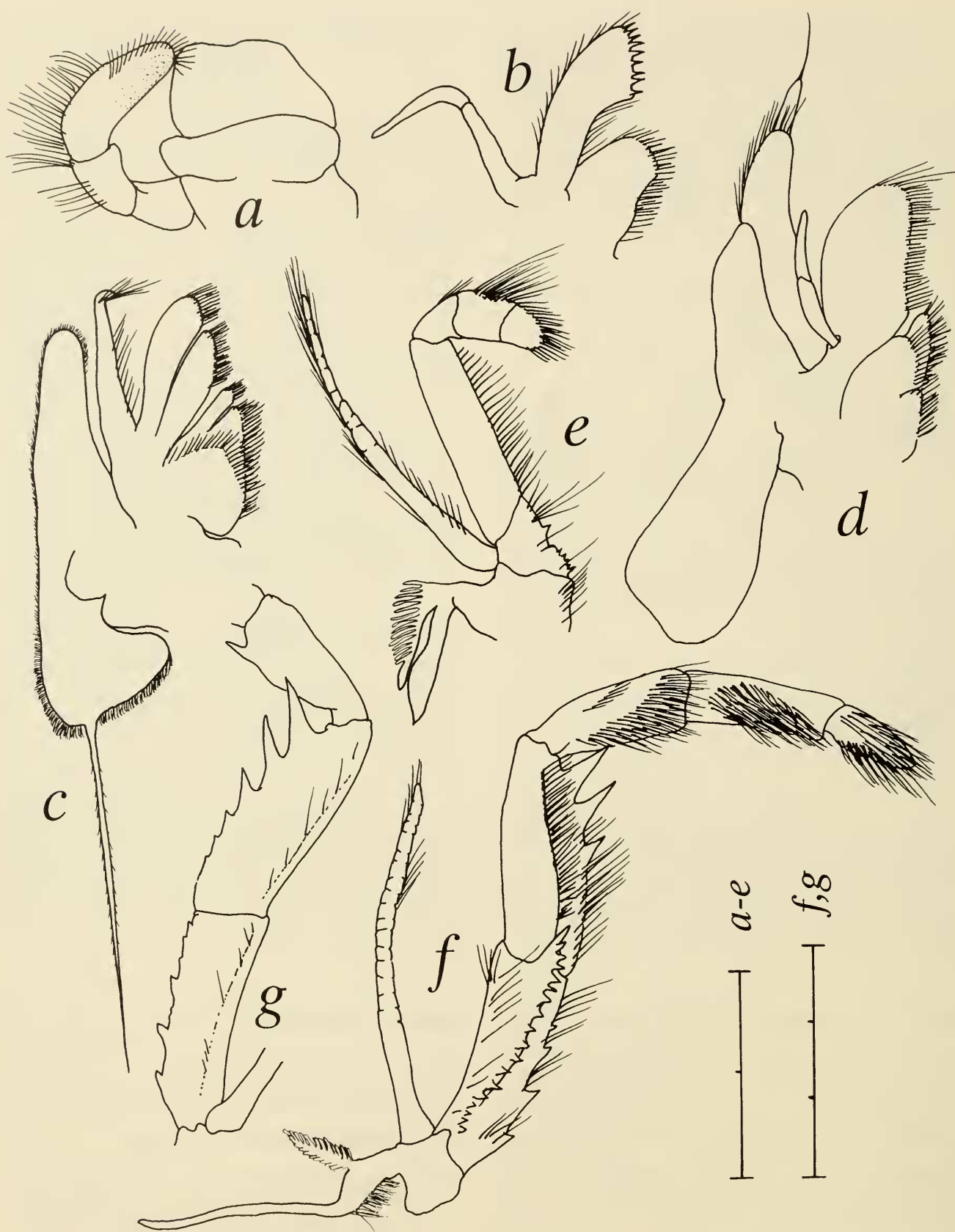


Fig. 3. *Axiopsis serratifrons* (A. Milne Edwards, 1873), ♀ (juvenile) CL 13.9 mm, Gorgona Island, USNM 251732. Mouthparts (left, all internal view except g): a, mandible; b, maxilla 1; c, maxilla 2; d, maxilliped 1; e, maxilliped 2; f, maxilliped 3; g, ischium, merus and carpus of maxilliped 3, external view (most setae omitted). Scales equal 2 mm (a-e), and 3 mm (f, g).

coll.: R. Franke, USNM 251733; 1 ♀, CL 7.4 mm, La Marranera, 1 Jul 1987, coll.: R. Franke, USNM 251734.

Color in life.—Carapace yellow, transparent, internal organs light brown. Antennules, antennae, chelipeds, and walking legs, cream white. Chelae with dark yellow chromatophores dorsally, and white ventral margin. Abdominal somites 1–5 dark yellow; abdominal somite 6 and telson transparent. Intestinal tract pink. Uropods light yellow. Pleopods dark yellow.

Habitat.—Subtidal, in burrows on rubble and broken stones.

Distribution.—Eastern Pacific: Mexico to Colombia, including Clipperton and Galápagos Islands; shore to 18 m.

Remarks.—In the description of this species Manning (1988) listed material from Colombia only from the continental coast (Ensenada de Utría). The species is now reported from Gorgona Island.

Lepidophthalmus bocourti

(A. Milne Edwards, 1870)

Fig. 4

Callianassa bocourti A. Milne Edwards, 1870:95.

Lepidophthalmus Eiseni Holmes, 1904:311, pl. 35, figs. 6–13.

Lepidophthalmus bocourti.—Manning & Felder, 1991:778.

Material examined.—Curichiche Island, Málaga Bay: 1 ♀, CL 7.0 mm, 24 Nov 1985, coll.: G. E. Ramos, USNM 251735. Gorgona Island, La Marranera: 1 ♂, CL 5.8 mm, 1 Jul 1987, coll.: R. Franke, USNM 251736.

Recognition characters.—Carapace with rostrum extending to about mid-length of eyestalks; anterolateral margins rounded. Antennular peduncle stouter than antennal peduncle, exceeding it by at least ½ length of 3rd antennular segment. Maxilliped 3 with propodus about as long as broad; dactyl slender, curved. Merus of major cheliped with spine on proximoventral margin. Pe-

reopod 3 with dactyl subtriangular; propodus with sinuous ventral margin forming 3 lobes, outer face covered with numerous tufts of short setae. Uropod with ovate endopod distinctly longer than broad; anterior exopodal plate with row of long corneous spines on posterolateral margin (Fig. 4h). Telson broader than long, posterior margin divided into 3 lobes.

Color in life.—Carapace white, transparent; internal organs light brown with light yellow margins. Chela of pereopod 1 with red spots on dorsal surface of palm, carpus, merus and ischium; tip of fingers reddish-yellow. Antennules, antennae, and pereopods 2–5 white. Abdominal somites 1 and 2 dark yellow; abdominal somites 3–6 light yellow, with reddish band on each somite posteriorly, and numerous red chromatophores on somites and telson. Uropods lime green. Pleopods yellow.

Habitat.—Intertidal, near freshwater streams in burrows on mud or fine sediment of basaltic origin.

Distribution.—Eastern Pacific: Mexico to Colombia. Intertidal.

Remarks.—*Lepidophthalmus bocourti* is the only eastern Pacific species of *Lepidophthalmus* Holmes, 1904, a genus recently resurrected by Manning & Felder (1991). Previous to this report, *L. bocourti* was not known south of Panamá.

Neocallichirus grandimana

(Gibbes, 1850)

Fig. 5

Callianassa grandimana Gibbes, 1850:194.—Manning, 1987:388, fig. 2.

Callianassa branneri.—Manning, 1987:388.

Neocallichirus grandimana.—Sakai, 1988:61.—Manning & Felder, 1991:779, figs. 3, 4.

Material examined.—Gorgona Island: 1 ♂, CL 6.9 mm, 5 May 1987, coll.: R. Franke, USNM 251737.

Recognition characters.—Carapace with

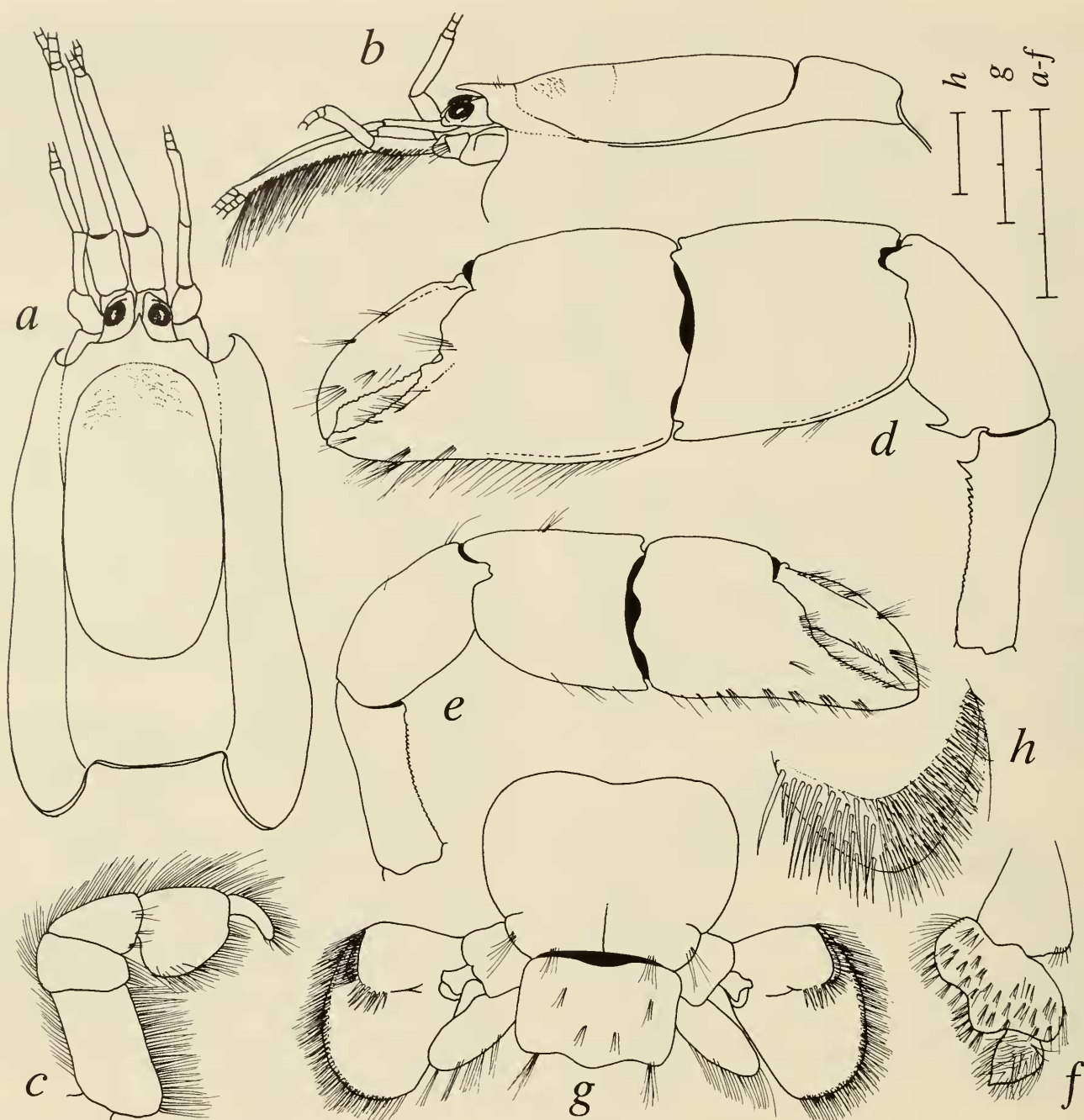


Fig. 4. *Lepidophthalmus bocourti* (A. Milne Edwards, 1870), ♀ CL 7.0 mm, Málaga Bay, USNM 251735. a, carapace and cephalic appendages, dorsal view; b, same, lateral view; c, maxilliped 3, external view; d, major cheliped (pereopod 1), lateral view; e, minor cheliped (pereopod 1), lateral view; f, propodus and dactyl of right pereopod 3, lateral view; g, abdominal somite 6, telson and uropods, dorsal view; h, posterolateral margin of right anterior exopodal plate. Scales equal 3 mm (a–f), 2 mm (g), and 0.5 mm (h).

sharp subtriangular rostrum extending to about mid-length of eyestalks; anterolateral margins broadly rounded; with dorsal oval. Antennal peduncle exceeding antennular peduncle by about $\frac{1}{4}$ length of 4th antennal segment. Third maxilliped with slender dactyl; propodus oval, as broad as long, more than twice width of dactyl. Chelipeds (pereopods 1) unequal; merus of large cheliped

with ventral margin keel-like, serrate. Pereopod 3 with dactyl subtriangular, elongate; propodus with ventral margin nearly straight, outer face covered with numerous tufts of short setae. Uropod with subquadrate endopod. Telson widest on anterior margin, posterior margin weakly concave medially. Pleopods 3–5 each with appendix interna embedded in margin of endopod.

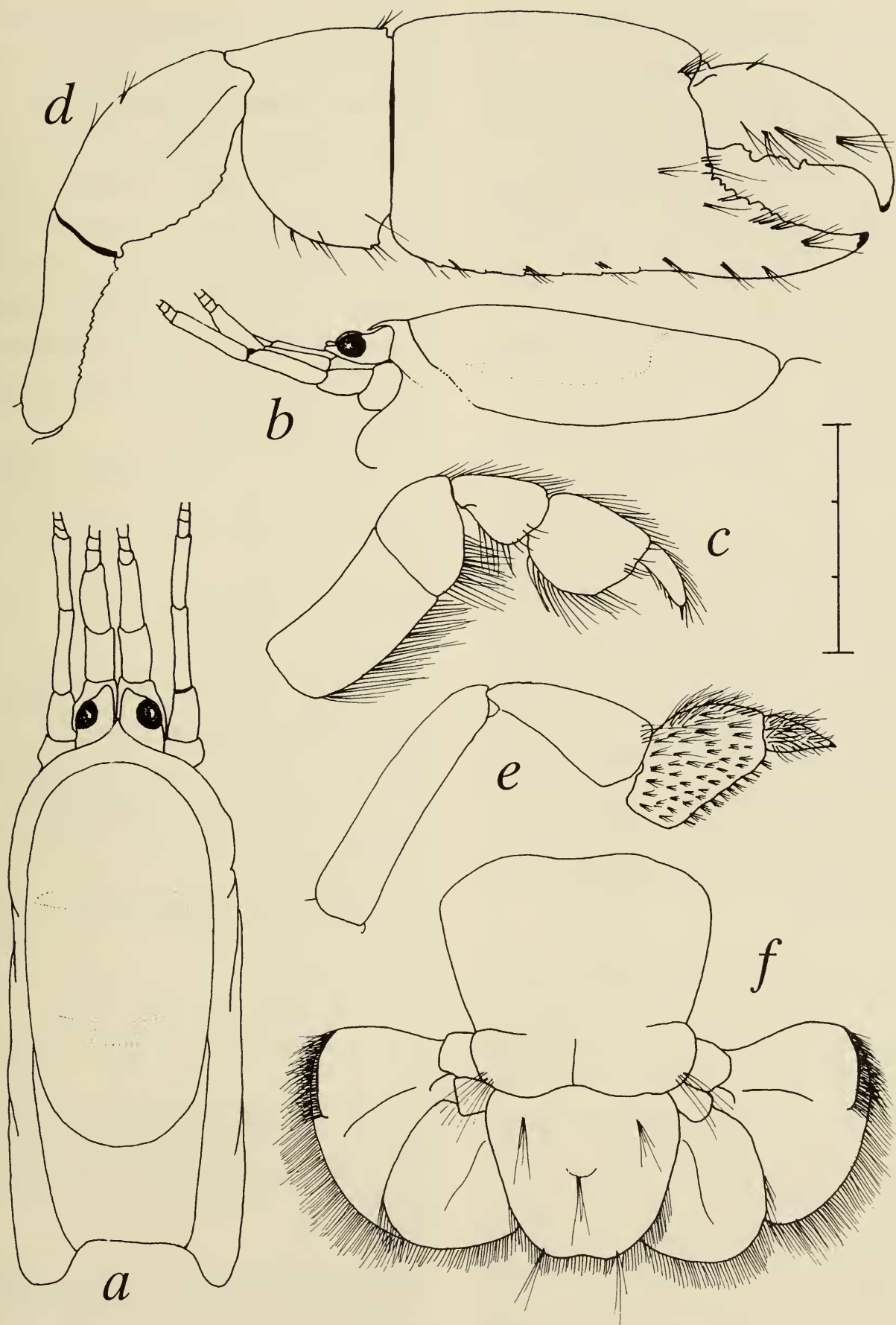


Fig. 5. *Neocallichirus grandimana* (Gibbes, 1850), ♂ CL 6.9 mm. Gorgona Island, USNM 251737. a, carapace and cephalic appendages, dorsal view; b, same, lateral view; c, maxilliped 3, external view; d, major cheliped (pereopod 1), lateral view; e, right pereopod 3, lateral view; f, abdominal somite 6, telson and uropods, dorsal view. Scale equals 3 mm.

Habitat.—Subtidal under stones at about 1–2 m in depth.

Distribution.—Eastern Pacific: Colombia and Ecuador. Western Atlantic: southeastern Florida to Brazil, including Bermuda Islands. Intertidal to shallow subtidal.

Remarks.—*Callianassa branneri* (Rathbun, 1900), a taxon previously reported from the Pacific coast of Colombia (Prahl et al. 1979, 1990; Prahl 1986) and the western Atlantic (e.g., Rathbun 1900, Biffar 1971), was shown by Manning (1987) to be a junior synonym of *C. grandimana* Gibbes, 1850. Subsequently, Sakai (1988) transferred *C. grandimana* to the genus *Neocallichirus* Sakai, 1988. In their discussion of *C. grandimana*, Manning (1987) and Manning & Felder (1991) included only Atlantic material, leaving in question the identity of the material reported previously as *C. branneri* from the Pacific coast of Colombia. We have compared our Colombian specimen as well as additional eastern Pacific material (USNM 142536: 1 ♀, CL 12.2 mm, Salinas, Ecuador, 13 Sep 1926, coll.: W. L. Schmitt), with the neotype of *C. grandimana* from the western Atlantic (see Manning 1987:389, fig. 2), and find that the Pacific material is in agreement with it. Thus, we conclude that *N. grandimana* is indeed amphi-American in distribution.

Family Callianideidae Kossmann, 1880

Callianidea laevicauda Gill, 1859

Callianidea laevicauda.—Kensley & Heard, 1991:499, figs. 3, 4, Table 1A.

Material examined.—Gorgona Island: 1 ♂, CL 6.1 mm, La Marranera, 1 Jul 1987, coll.: R. Franke, USNM 251738; 1 ♀, CL 11.2 mm, La Ventana, 9 Sep 1987, coll.: R. Franke, USNM 251739; 1 ♀, CL 4.5 mm, El Muelle, 6 Mar 1987, coll.: R. Franke, USNM 251740; 1 ♂, CL 7.2 mm, 8 Jan 1987, coll.: C. Murillo, USNM 251741. Ensenada de Utría: 1 ♂, CL 7.1 mm, 1 juv., CL 3.4 mm, Playa Blanca Island, 14 Jul 1984, coll.: G. E. Ramos, USNM 251742.

Color in life.—Cephalothorax white,

transparent, with red spots dorsally and blue chromatophores near cervical groove. Pereopods 1 and 2 red, with white stripes. Tip of fingers of chelae (pereopods 1) dark yellow. Pereopods 3–5 white, transparent. Antennular and antennal flagella with white and red bands. Abdomen white, transparent, or often abdomen and telson pink. Intestinal tract green or dark brown with black margins. Tail fan and pleopods transparent.

Habitat.—Intertidal, in burrows under stones or coralline sand. Very abundant in sandy bottoms where individuals are often seen at entrance of burrow moving their chelipeds and antennae.

Distribution.—Eastern Pacific: Socorro Island, Mexico, and Colombia. Western Atlantic: Caribbean. Intertidal to shallow subtidal.

Family Laomediidae Borradaile, 1903

Axianassa sp.

Material examined.—Ensenada de Utría: 1 ♂, CL 3.4 mm, Playa Blanca Island, 14 Jul 1984, coll.: G. E. Ramos, USNM 251743. (Specimen missing abdomen, antennules, most of antennae, and 5th pereopods.)

Habitat.—Intertidal, under stones and coralline sand.

Remarks.—Our specimen of *Axianassa* sp. could possibly represent *A. mineri* Boone, 1931, the only eastern Pacific species of the genus. According to Kensley & Heard (1990), *A. mineri* is known only from the holotype collected in the Bay of Panamá (Pacheca Island, Pearl Islands). However, because our specimen is missing structures considered of diagnostic importance (i.e., antennal acicle, abdomen), it has not been possible to identify it with certainty to the species level.

Family Upogebiidae Borradaile, 1903

Pomatogebia rugosa (Lockington, 1878)

Upogebia rugosa.—Williams, 1986:58, fig. 21.

Pomatogebia rugosa.—Williams & Ngoc-Ho, 1990:616.

Material examined.—Playa Pizarro, Gorgona Island: 1 ♀ ovig., CL 5.1 mm, 12 Jan 1987, coll.: R. Franke, USNM 251744; 1 ♂, CL 3.6 mm, 12 Apr 1987, coll.: R. Franke, USNM 251745.

Habitat.—Subtidal, between branches or heads of *Pocillopora* corals.

Distribution.—Previously known only from Baja California. The discovery of *Pomatogobia rugosa* in Colombia represents a considerable southward range extension for this species. Subtidal to about 18 m.

Upogebia maccraryae Williams, 1986

Upogebia maccraryae Williams, 1986:27, fig. 10.

Material examined.—Tumaco, Department of Nariño: 9 ♀ (4 ovigs.), CL 7.8–8.6 mm, 28 Nov 1981, coll.: H. von Prael, USNM 251746. Playa Basura, Buenaventura Bay: 1 ♂ CL 5.7 mm, 1 ♀ ovig. CL 7.0 mm, 8 Jun 1989, coll.: J. R. Cantera, CRBMUV 89019.

Habitat.—Intertidal, in burrows on mud near mangroves.

Distribution.—Eastern Pacific: El Salvador to Ecuador; 3–5.4 m.

Remarks.—Although the Colombian coast is within the range of this species, it had not been previously reported from this coast.

Upogebia spinigera (Smith, 1871)

Upogebia spinigera.—Williams, 1986:41, fig. 15.

Material examined.—Aguacate Bay, Department of Chocó: 1 ♀ ovig., CL 7.6 mm, 2 juvs., CL 3.8, 4.6 mm, 15 Jul 1986, USNM 251747. Rampa de Los Suecos, Málaga Bay: 2 ♂ CL 6.0–8.9 mm, 1 ♀ CL 5.3 mm, 27 Dec 1985, coll.: G. E. Ramos, CRBMUV 85069. Cangrejo Island, Buenaventura Bay: 2 ♂ CL 7.2–8.9 mm, 1 ♀ CL 7.5 mm, 1 ♀ ovig. CL 8.8 mm, 11 Dec 1986, coll.: R. Neira, CRBMUV 86032.

Color in life.—Carapace, abdomen, pereopods 2–5, and tail fan transparent. Pe-

reopods 1 white, transparent, tips of fingers dark brown. Setae on body, antennules and antennae very light brown.

Habitat.—Intertidal, in holes on wood stranded on beach, or in burrows on rocky shores. Often captured along with the shrimp *Alpheus bouvieri* A. Milne Edwards.

Distribution.—Eastern Pacific: Golfo de Fonseca to Ecuador; intertidal to shallow subtidal.

Remarks.—The only previous report of this species from Colombia is from Buenaventura (Holthuis 1952).

Upogebia tenuipollex Williams, 1986

Upogebia tenuipollex Williams, 1986:45, fig. 16.

Material examined.—Málaga Bay: 5 ♀ (1 ovig.), CL 4.8–8.1 mm, 4 ♂, CL 5.5–6.6 mm, Curichiche Island, 26 Feb 1986, coll.: G. E. Ramos, USNM 251748; 4 ♂ CL 4.5–6.3 mm, 1 ♀ CL 7.1 mm, 1 ♀ ovig. CL 6.7 mm, 12 Nov 1981, coll.: H. von Prael, CRBMUV 81086; 1 ♂ CL 8.0 mm, La Sierpe, 25 Dec 1985, coll.: G. E. Ramos, CRBMUV 85032; 1 ♀ CL 9.8 mm, Cangrejo Island, 11 Dec 1986, coll.: R. Neira, CRBMUV 86006. Gorgona Island: 1 ♂ CL 7.0 mm, 1 ♀ CL 8.1 mm, Gorgonilla, 8 Jan 1987, coll.: C. Murrillo, CRBMUV 87007; 1 ♀ ovig. CL 8.5 mm, Gorgonilla, 29 Jan 1987, coll.: R. Franke, CRBMUV 87008; 1 ♂ CL 8.7 mm, El Tractor, 18 Mar 1987, coll.: R. Franke, CRBMUV 87009; 2 ♀ CL 8.6–9.2 mm, El Tractor, 25 Jun 1987, coll.: R. Franke, CRBMUV 87011; 2 ♂ CL 5.4–6.6 mm, 1 ♀ CL 10.1 mm, Playa Pizarro, 16 May 1988, coll.: H. von Prael, CRBMUV 88010.

Color in life.—Carapace and abdomen white, transparent, or often light yellow with a blue chromatophore spot on cervical groove. Carapace sometimes light brown on dorsal surface. Setae on chelipeds, pereopods, and tail fan lemon yellow. Eggs of ovigerous females orange.

Habitat.—Intertidal, in burrows and crevices on broken stones, rubble, or on roots of mangroves.

Distribution.—Eastern Pacific: Colombia to Ecuador; intertidal to 3.6 m.

Remarks.—The species was previously known only from Ecuador.

Upogebia thistlei Williams, 1986

Upogebia thistlei Williams, 1986:47, fig. 17.

Material examined.—El Tractor, Gorgona Island: 1 ♀ CL 7.3 mm, 18 Mar 1987, coll.: R. Franke, CRBMUV 87010.

Habitat.—Intertidal, in rubble.

Distribution.—Eastern Pacific: Gulf of California to northern Ecuador; intertidal to shallow subtidal.

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Literature Cited

- Andrade V., H., & P. Baez R. 1977. *Calastacus rostriserratus* n. sp. (Crustacea, Decapoda, Macrura, Axiidae).—*Museo de Historia Natural, Valparaiso* 10(10):65–67.
- Anderson, A. R. S. 1896. Natural history notes from the R.I.M. Survey Steamer "Investigator." Series II, No. 21. An account of the deep-sea Crustacea collected during the season 1894–95.—*Journal of the Asiatic Society of Bengal* 65(2): 88–106.
- Bate, C. S. 1888. Report on the Crustacea Macrura collected by H.M.S. Challenger during the years 1873–76.—Report on the Scientific Results of the Voyage of H.M.S. Challenger during the years 1873–76, *Zoology* 24:i–xc, 1–942.
- Biffar, T. A. 1971. The genus *Callianassa* (Crustacea, Decapoda, Thalassinidea) in south Florida, with keys to the western Atlantic species.—*Bulletin of Marine Science* 21(3):637–715.
- Bell, T. 1853. A history of the British stalk-eyed Crustacea. John van Voorst, London, lxx, 386 pp. 174 figs.
- Boone, L. 1931. A collection of anomuran and macruran Crustacea from Panama and the fresh waters of the Canal Zone.—*Bulletin of the American Museum of Natural History* 633(2): 137–189.
- Borradaile, L. A. 1903. On the classification of the Thalassinidea.—*Annals and Magazine of Natural History* (7) 12:534–551.
- Bott, R. 1955. Litorale Dekapoden, ausser *Uca*. Dekapoden (Crustacea) aus El Salvador, 2.—*Senckenbergiana Biologica* 36(1/2):45–70, pls. 1–8.
- Bouvier, E.-L. 1895. Sur une collection de Crustacés Décapodes recueillis en Basse-Californie par M. Diguët.—*Bulletin du Muséum d'Histoire Naturelle, Paris* 1:6–8.
- Dana, J. D. 1852. Macroura. Conspectus Crustaceorum & conspectus of the Crustacea of the Exploring Expedition under Capt C. Wilkes, U.S.N.—*Proceedings of the Academy of Natural Sciences of Philadelphia* 6:10–28.
- . 1854. Catalogue and descriptions of Crustacea collected in California by Dr. John L. Le Conte.—*Proceedings of the Academy of Natural Sciences of Philadelphia* 7:175–177.
- Faxon, W. 1893. Reports on the dredging operations off the west coast of Central America to the Galápagos, to the west coast of Mexico, and in the Gulf of California, in charge of Alexander Agassiz, carried on by the U.S. Fish Commission Steamer "Albatross" during 1891, Lieut. Commander Z. I. Tanner, U.S.N., commanding. 6. Preliminary descriptions of new species of Crustacea.—*Bulletin of the Museum of Comparative Zoology at Harvard College* 14(7):149–220.
- Gibbes, L. R. 1850. On the carcinological collections of the United States, and an enumeration of the species contained in them, with notes on the most remarkable, and descriptions of new species.—*Proceedings of the American Association for the Advancement of Science*, 3rd meeting: 167–201.
- Gill, T. 1859. Descriptions of a new species of *Callicianidea* Ed.—*Proceedings of the Philadelphia Academy of Sciences* 1859:167–168.
- Grebenyuk, L. P. 1975. Two new Decapoda species of the superfamily Thalassinidea.—*Zoologicheskii Zhurnal* 54(2):299–304 (In Russian with English summary).
- Hendrickx, M. E. 1987. The species of Axiidae (Crustacea: Thalassinidea) from the Pacific coast of

- Mexico, with a key for their identification.—*Revista de Biología Tropical* 35(2):355–358.
- Holmes, S. J. 1904. On some new or imperfectly known species of west American Crustacea.—*Proceedings of the California Academy of Sciences* (3, Zoology) 3:307–331.
- Holthuis, L. B. 1952. On two species of Crustacea Decapoda. Macrura from the N.W. coast of South America.—*Reports of the Lund University Chile Expedition 1948–49*, 4. Lunds Universitets Årsskrift N.F. Avd. 2, 47(9):3–11.
- Huxley, T. H. 1878. On the classification and the distribution of the crayfishes.—*Proceedings of the Zoological Society of London for the year 1878*:752–788.
- Kensley, B. 1981. Notes on *Axiopsis* (*Axiopsis*) *ser-ratifrons* (A. Milne Edwards) (Crustacea: Decapoda: Thalassinidea).—*Proceedings of the Biological Society of Washington* 93:1253–1263. [1980]
- . 1989. New genera in the thalassinidean families Calocarididae and Axiidae (Crustacea: Decapoda).—*Proceedings of the Biological Society of Washington* 102:960–967.
- , & R. Heard. 1990. The genus *Axianassa* (Crustacea: Decapoda: Thalassinidea) in the Americas.—*Proceedings of the Biological Society of Washington* 103:558–572.
- , & ———. 1991. An examination of the shrimp family Callinideidae (Crustacea: Decapoda: Thalassinidea).—*Proceedings of the Biological Society of Washington* 104:493–537.
- Kossmann, R. 1880. *Reise in die Küstengebiete des Rothen Meeres*, volume 2, part 1, section III, Malacostraca.—*Zoologische Ergebnisse einer im Auftrage der königlichen Akademie der Wissenschaften zu Berlin 1880*:67–140.
- Leach, W. E. 1814. Crustaceology. In D. Brewster, ed., *Edinburgh encyclopaedia* 7(2):385–437, Edinburgh.
- . 1815. A tabular view of the external characters of four classes of animals, which Linné arranged under Insecta; with the distribution of the genera composing three of these classes into 7 orders.—*Transactions of the Linnean Society of London (Zool.)* 11:306–400.
- Lockington, W. N. 1878. Remarks upon the Thalassinidea and Astacidea of the Pacific coast of North America, with description of a new species.—*Annals and Magazine of Natural History* (5)2:299–304.
- Man, J. G. de. 1925. Sur deux espèces encore imparfaitement connues du genre *Axius* Leach.—*Bulletin de la Société zoologique de France* 50: 50–61.
- Manning, R. B. 1987. Notes on western Atlantic Callianassidae (Crustacea: Decapoda: Thalassinidea).—*Proceedings of the Biological Society of Washington* 100:386–401.
- . 1988. The status of *Callianassa hartmeyeri* Schmitt, 1935, with the description of *Corallianassa xutha* from the west coast of America (Crustacea, Decapoda, Thalassinidea).—*Proceedings of the Biological Society of Washington* 101:883–889.
- , & Chace, F. A., Jr. 1990. Decapod and stomatopod Crustacea from Ascension Island, South Atlantic Ocean.—*Smithsonian Contributions to Zoology* 503:1–91.
- , & Felder, 1991. Revision of the American Callianassidae (Crustacea: Decapoda: Thalassinidea).—*Proceedings of the Biological Society of Washington* 104:764–792.
- Milne Edwards, A. 1870. Révision du genre *Callianassa* (Leach).—*Nouvelle Archives du Muséum d'Histoire Naturelle, Paris* 6:75–101.
- . 1873. Description de quelques Crustacés nouveaux ou peu connus provenant du Musée de M. C. Godeffroy.—*Journal des Muséum Godeffroy* 4:77–88.
- Milne Edwards, H. 1837. *Histoire naturelle des Crustacés, comprenant l'anatomie, la physiologie et la classification de ces animaux* 2:532 pp., Paris.
- Ortmann, A. 1891. Die Decapoden-Krebse des Strassburger Museums. 3. Die Abtheilungen der Reptantia Boas: Homaridae, Loricata und Thalassinidea.—*Zoologischen Jahrbüchern* 6:1–58.
- Poore, G. C. B., & D. J. G. Griffin. 1979. The Thalassinidea (Crustacea: Decapoda) of Australia.—*Records of the Australian Museum* 32(6):217–321.
- Prahl, H. von. 1986. Crustáceos decápodos asociados a diferentes habitats en la Ensenada de Utría, Chocó, Colombia.—*Actualidades Biológicas (Universidad de Antioquia, Medellín)* 15(57): 95–99.
- , J. R. Cantera, & R. Contreras. 1990. *Manglares y hombres del Pacífico Colombiano*. FEN Colombia, Colciencias, Editorial Presencia, Bogotá, Colombia, 193 pp.
- , F. Guhl, & M. Groggl. 1979. *Gorgona*. Futura Grupo Editorial, Bogotá, Colombia, 279 pp.
- Rathbun, M. J. 1900. Results of the Branner-Agassiz Expedition to Brazil. I. The decapod and stomatopod Crustacea.—*Proceedings of the Washington Academy of Sciences* 2:133–156.
- . 1902. Descriptions of new decapod crustaceans from the west coast of North America.—*Proceedings of the United States National Museum* 24:885–905.
- Saint Laurent, M. de. 1973. Sur la systématique et la phylogénie des Thalassinidea: définition des familles des Callianassidae et des Upogebiidae et diagnose de cinq genres nouveaux (Crustacea:

- Decapoda).—Comptes Rendus Hebdomadaires des Séances de l'Académie des Sciences, Paris (series D) 277:513–516.
- Sakai, K. 1988. A new genus and five new species of Callianassidae (Crustacea: Decapoda: Thalassinidea) from northern Australia.—The Beagle, Records of the Northern Territory Museum of Arts and Sciences 5(1):51–69.
- , & M. de Saint Laurent. 1989. A check list of Axiidae (Decapoda, Crustacea, Thalassinidea, Anomura), with remarks and in addition descriptions of one new subfamily, eleven new genera and two new species.—Naturalists (Tokushima Biological Laboratory, Shikoku Women's University) 3:1–104.
- Say, T. 1818. An account of the Crustacea of the United States.—Journal of the Academy of Natural Sciences of Philadelphia 1:235–253.
- Schmitt, W. L. 1924. Bijdragen tot de kennis der fauna van Curaçao. Resultaten eener reis van anomuran and stomatopod Crustacea.—Bijdragen tot de Dierkunde 23:61–81.
- Smith, S. I. 1871. List of the Crustacea collected by J. A. McNeil in Central America.—Second and Third Annual Report of the Trustees of the Peabody Academy of Science, for the years 1869 and 1870:87–98.
- Squires, H. J. 1977. A new species of *Axiopsis* (*Axiopsis*) (Thalassinidea, Axiidae) from the Pacific coast of Colombia.—Canadian Journal of Zoology 55(11):1885–1891.
- . 1979. *Axiopsis caespitosa* (Thalassinidea, Axiidae), a new species from the Pacific coast of Colombia.—Canadian Journal of Zoology 57(8):1584–1591.
- Stimpson, W. 1857. Notices of new species of Crustacea of western North America; being an abstract from a paper to be published in the Journal of the Society.—Proceedings of the Boston Society of Natural History 6:84–89.
- . 1866. Descriptions of new genera and species of macrurous Crustacea from the coasts of North America.—Proceedings of the Chicago Academy of Sciences 1:46–48.
- Streets, T. H. 1871. Catalogue of Crustacea from the Isthmus of Panama, collected by J. A. McNeil.—Proceedings of the Academy of Natural Sciences of Philadelphia 23:238–243.
- Williams, A. B. 1986. Mud shrimps, *Upogebia*, from the eastern Pacific (Thalassinidea: Upogebiidae).—San Diego Society of Natural History, Memoir 14:1–60.
- , & N. Ngoc-Ho. 1990. *Pomatogebia*, a new genus of thalassinidean shrimps from western hemisphere tropics (Crustacea: Upogebiidae).—Proceedings of the Biological Society of Washington 103:614–616.
- Wollebaek, A. 1908. Remarks on decapod crustaceans of the North Atlantic and the Norwegian fjords (I & II).—Bergens Museums Aarbog 12:1–74.
- (RL) Smithsonian Oceanographic Sorting Center, National Museum of Natural History, Washington, D.C. 20560, U.S.A.; (GER) Facultad de Ciencias, Sección Biología Marina, Universidad del Valle, Apartado Aéreo 25360, Cali, Colombia.

Appendix

Checklist of species of Thalassinidea from the eastern Pacific, with their known geographic and bathymetric distribution, past generic placement, and common synonyms. (Based primarily on: Williams 1986; Hendrickx 1987; Kensley 1989; Sakai & De Saint Laurent 1989; Kensley & Heard 1990, 1991; Manning & Felder 1991.)* = species known to occur on the Pacific coast of Colombia.

Family Axiidae Huxley, 1878

Genus *Acanthaxius* Sakai & De Saint Laurent, 1989

*1. *A. caespitosa* (Squires, 1979): Gulf of California, and Colombia; 72–200 m. (Previously in the genus *Axiopsis* Borradaile, 1903).

2. *A. spinulicauda* (Rathbun, 1902): British Columbia, Puget Sound, and California; 70–255 m. (Previously in the genus *Axiopsis* Borradaile, 1903.)

Genus *Axiopsis* Borradaile, 1903

*3. *A. baronai* Squires, 1977: Gulf of California, Colombia, and Perú; 5–9 m.

*4. *A. serratifrons* (A. Milne Edwards, 1873): in the eastern Pacific from Colombia; Indo-Pacific; Red Sea; western and South Atlantic; shallow subtidal to about 17 m.

Genus *Calocarides* Wollebaek, 1908

5. *C. quinqueseriatus* (Rathbun, 1902): British Columbia, Oregon, and California; 228–2200 m. (Previously in the genus *Calastacus* Faxon, 1893.)

Genus *Eiconaxius* Bate, 1888

6. *E. acutifrons* Bate, 1888: in the eastern Pacific from the Bay of Panamá; Indo-Pacific; 595–1015 m. (Previously in the genus *Axius* Leach, 1815.)

7. *E. cristagalli* (Faxon, 1893): south of Panamá; 850 m. (Previously in the genus *Axius* Leach, 1815.)

Genus *Neaxius* Borradaile, 1903

*8. *N. frankeae*, new species: Gorgona Island (Colombia); shallow subtidal.

9. *N. vivesi* (Bouvier, 1895): Baja California, Gulf of

California, and Panamá; 5–7 m (Previously in the genus *Axius* Leach, 1815.)

Family Calocarididae Ortmann, 1891

Genus *Calocaris* Bell, 1853

10. *C. granulosa* Grebenyuk, 1975: Bay of Alaska; 756–1000 m.

Genus *Calastacus* Faxon, 1893

11. *C. rostriserratus* Andrade & Baez, 1977: off Valparaíso (Chile); 320–400 m.

12. *C. stylirostris* Faxon, 1893: off Acapulco (Mexico), and Bay of Panamá; 1098–1220 m.

Genus *Lophaxius* Kensley, 1989

13. *L. rathbunae* Kensley 1989: northeastern Pacific from Alaska to California; 549–1190 m. [Kensley (1989: 963) determined that eastern Pacific records of *Calastacus investigatoris* Anderson, 1896, are actually *L. rathbunae*.]

Family Callianassidae Dana, 1852

Genus *Callichirus* Stimpson, 1866

14. *C. seilacheri* (Bott, 1955): El Salvador to Chile; intertidal. (Previously in the genus *Callianassa* Leach, 1814.)

Genus *Corallianassa* Manning, 1987

*15. *C. xutha* Manning, 1988: Mexico to Colombia, including Clipperton and Galápagos Islands; shore to 18 m.

Genus *Lepidophthalmus* Holmes, 1904

*16. *L. bocourti* (A. Milne Edwards, 1870): Mexico to Colombia; intertidal. (Previously in the genus *Callianassa* Leach, 1814; =*Lepidophthalmus eiseni* Holmes, 1904).

Genus *Neocallichirus* Sakai, 1988

*17. *N. grandimana* (Gibbes, 1850): Panamá to Ecuador; intertidal to shallow subtidal. [Previously in the genus *Callianassa*; =*Callianassa branneri* (Rathbun, 1900).]

Genus *Neotrypaea* Manning & Felder, 1991

18. *N. californiensis* (Dana, 1854): Alaska to Baja California; intertidal. (Previously in the genus *Callianassa* Leach, 1814.)

19. *N. gigas* (Dana, 1852): British Columbia to Baja California; intertidal to shallow subtidal. (Previously in the genus *Callianassa*; =*Callianassa longimana* Stimpson, 1857.)

20. ?*N. rochei* (Bouvier, 1895): Baja California; probably intertidal. (Generic placement uncertain, see Manning & Felder 1991:792.)

21. *N. uncinata* (H. Milne Edwards, 1837): Chile; intertidal to shallow subtidal. (Previously in the genus *Callianassa* Leach, 1814.)

Genus *Notiax* Manning & Felder, 1991

22. *N. brachyophthalma* (A. Milne Edwards, 1870): Chile, Argentina; subtidal. (Previously in the genus *Callianassa* Leach, 1814.)

Family Ctenochelidae

Manning & Felder, 1991

Genus *Callianopsis* De Saint Laurent, 1973

23. *C. goniophthalma* (Rathbun, 1902): Alaska to California; 480–650 m. (Previously in the genus *Callianassa* Leach, 1814.)

Family Callianideidae Kossmann, 1880

Genus *Callianidea* H. Milne Edwards, 1837

*24. *C. laevicauda* Gill, 1859: in the eastern Pacific from Baja California, and Socorro Island (Mexico), to Colombia, and the Galápagos Islands; in the western Atlantic from the Caribbean; intertidal to shallow subtidal.

Family Laomediidae Borradaile, 1903

Genus *Axianassa* Schmitt, 1924

25. *A. mineri* Boone, 1931: Bay of Panamá; intertidal.

26. *A. canalis* Kensley & Heard, 1990: Panamá Canal; subtidal.

*27. *A. sp.* (reported herein).

Family Upogebiidae Borradaile, 1903

Genus *Pomatogebia*

Williams & Ngoc-Ho, 1990

28. *P. cocosia* (Williams, 1986): Cocos Islands (Costa Rica); subtidal. (Previously in the genus *Upogebia* Leach, 1814.)

*29. *P. rugosa* (Lockington, 1878): Baja California, and Colombia; subtidal to about 18 m. (Previously in the genus *Upogebia* Leach, 1814.)

Genus *Upogebia* Leach, 1814

30. *U. acanthops* Williams, 1986: Panamá; 1 m.

31. *U. affinis* (Say, 1818): in the eastern Pacific from California (introduced); in the western Atlantic from Massachusetts to Brazil; intertidal to 29 m.

32. *U. burkenroadi* Williams, 1986: Sonora (Mexico); shallow subtidal.

33. *U. dawsoni* Williams, 1986: Baja California to Panamá; intertidal.

34. *U. galapagensis* Williams, 1986: Galápagos Islands; intertidal.

35. *U. jonesi* Williams, 1986: Baja California to Panamá; intertidal to 72 m.

36. *U. lepta* Williams, 1986: Santa Catalina Islands (California) and Los Coronados Islands (Baja California); 72–101 m.

37. *U. longipollex* (Streets, 1871): El Salvador to Ecuador; intertidal.

*38. *U. macroryae* Williams, 1986: El Salvador to Ecuador; 3–5.4 m.

39. *U. macginitieorum* Williams, 1986: California; intertidal.
40. *U. onychion* Williams, 1986: California; 37.8 m.
41. *U. pugettensis* (Dana, 1852): Alaska to California; intertidal to several fathoms.
42. *U. ramphula* Williams, 1986: Nayarit (Mexico); 7.2–18 m.
43. *U. schmitti* Williams, 1986: Panamá; subtidal.
- *44. *U. spinigera* (Smith, 1871): Golfo de Fonseca to Ecuador; intertidal to shallow subtidal.
- *45. *U. tenuipollex* Williams, 1986: Colombia, and Ecuador; intertidal to 3.6 m.
- *46. *U. thistlei* Williams, 1986: Gulf of California to Ecuador; intertidal to shallow subtidal.
47. *U. veleronis* Williams, 1986: Islas Tres Marias (Mexico), and Ecuador; 3.6–23.4 m.